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TWO INTERSECTIONAL HYBRIDS IN *LIATRIS* (ASTERACEAE) FROM EAST TEXAS

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ABSTRACT

A hybrid between *Liatris squarrosa* var. *glabrata* (sect. *Liatris*) and *L. pycnostachya* (sect. *Suprago*) from Lamar Co., Texas, is described and named here as **L. ×johnsonii** M. White. A hybrid between *L. elegans* var. *elegans* (sect. *Liatris*) and *L. tenuis* (sect. *Vorago*) from Newton and Angelina counties, Texas, is described and named as **L. ×orzellii** Nesom. Documentation is provided for each hybrid.

KEY WORDS: *Liatris squarrosa*, *L. pycnostachya*, *L. elegans*, *L. tenuis*, hybrids, Texas

Two interspecific hybrids in *Liatris* have been observed in east Texas, neither of which has been previously reported, and in keeping with the tradition of providing names for *Liatris* hybrids, each is here formally identified with an epithet. Hybrids are not unusual in the genus, and "The evolutionary and taxonomic coherence of *Liatris* is supported by the apparent ease with which hybrids are formed between species" (Nesom 2005, p. 1306). Both examples reported here are intersectional hybrids, further emphasizing this coherence. A list of *Liatris* hybrids and their putative parents is at the end of the FNA treatment of the genus (Nesom 2006) and an infrageneric classification is given in Nesom (2005).

Liatris ×johnsonii M. White, hybrid nov. [*L. pycnostachya* Michx., sect. *Suprago* × *L. squarrosa* (L.) Michx. var. *glabrata* (Rydb.) Gaiser, sect. *Liatris*] **TYPE**: **USA. Texas**. Lamar Co.: ca 11 mi W of center of Paris, 0.73 mi N of jct of CR 35150 and CR 35020 to corner and then 0.19 mi NW, 33° 41' 38" N, 95 ° 46' 12" W, native *Sporobolus silveanus* prairie at the head of intermittent tributary stream of Maxey Creek, Parisian Silt Loam (Ressel 1979) atop the Bonham Formation, 7 Jul 2009, *M. White 09-1* (BRIT).

Hybrid between *Liatris pycnostachya* and *L. squarrosa* var. *glabrata* and intermediate in morphology, especially in head size and arrangement and involucral bract shape. (Fig. 1, center).

The epithet ("johnsonii") commemorates Johnny Johnson who, after purchasing the Lamar County property where this new hybrid grows, recognized it was native prairie and began working to reclaim it from the cedars and brush.

The hybrid was discovered in a native prairie growing with populations of *Liatris pycnostachya* (*White 09-2*, BRIT) and *L. squarrosa* var. *glabrata* (*White 09-3*, BRIT) and is clearly intermediate between the two species. At this site, hundreds of plants of *L. pycnostachya* grow mainly in the flatter open areas, while the relatively uncommon *L. squarrosa* var. *glabrata* is confined to a slope receiving afternoon shade. Only one or two individuals of *L. pycnostachya* were found within the population of *L. squarrosa* var. *glabrata*, one of which was very close to the hybrid.

Figure 1. *Liatris* ×*johnsonii* (center) and its parents: *L. squarrosa* var. *glabrata* (left) and *L. pycnostachya* (right). Photos from prairie west of Paris, Lamar Co., Texas. July 7 and 9, 2009.

Figure 2. *Liatris ×johnsonii*. Lamar Co., Texas. July 7, 2009. A single plant with two stems.

The single hybrid plant, which consisted of two stalks arising from a single corm (Fig. 2), was growing within a population of about 75 individuals of *Liatris squarrosa* var. *glabrata*. At first glance the hybrid appeared to be a much taller individual of var. *glabrata*. Closer inspection revealed that the heads are smaller with shorter, stiffly spreading, purple-tinged phyllaries and are more densely arranged around the stem, like *L. pycnostachya*, rather than mostly alternate, as in *L. squarrosa* var. *glabrata*. Compared to *L. pycnostachya* at the site, the heads are noticeably larger and not nearly so densely spaced, and the phyllaries are broader. The hybrid also is intermediate in other features, as noted in the comparison below, which corroborate the hypothesis of hybridity.

Liatris squarrosa var. *glabrata*
Leaf margins with a narrow, bright white, indurate-thickened band; **involucres** cylindro-campanulate, 18–22 × 8–9 mm; **phyllaries** in 5–7 series, apices erect,margins without a hyaline border; **florets** ca. 28–30; **corolla** lobes hispid on adaxial surface; **pappus** bristles plumose, barbels 8-10 times longer than the bristle width.

Liatris ×johnsonii
Leaf margins with a narrow, whitish, indurate-thickened band; **involucres** cylindro-campanulate, 9–11 × 7–8 mm; **phyllaries** in 5–6 series, apices spreading to slightly recurved, margins without a hyaline border; **florets** 18–19; **corolla lobes** sparsely hirsute to glabrate on adaxial surface; **pappus bristles** subplumose, barbels 2-3 times longer than the bristle width.

Liatris pycnostachya
Leaf margins green (without a white band) and not indurate-thickened; **involucres** campanulate-cylindric, 7–8 × 4–5 mm; **phyllaries** in 4-5 series, apices sharply recurving, distally dilated and petaloid, margins with a narrow hyaline border; **florets** 6; **corolla lobes** glabrous on adaxial surface; **pappus bristles** minutely barbellate, barbels shorter than the bristle width.

Nesom (2006) recognized two varieties within *Liatris squarrosa* but noted (p. 518) that "var. *glabrata* apparently is morphologically discontinuous from var. *squarrosa* where their ranges closely approach each other (but do not meet) in Texas, and they might be treated as separate species, especially in view of the treatment here of *Liatris compacta* [(Torr. & Gray) Rydb.] at specific rank." *Liatris pycnostachya* also hybridizes with var. *squarrosa* and these two are the parents of a hybrid from southeastern Illinois, where only var. *squarrosa* occurs, although neither parent was identified to a rank below species. Mohlenbrock's floristic treatment (2002) included both *L. squarrosa* var. *squarrosa* and *L. squarrosa* var. *hirsuta* (Rydb.) Gaiser (= *L. hirsuta* Rydb., "scattered in sw. Ill."), but the presence of typical *L. hirsuta* was not confirmed for the state in the FNA study and it is assumed here that typical *L. squarrosa* was the parent.

Liatris ×ridgwayi Standley, Rhodora 31: 37. 1929. **TYPE: USA. Illinois**. Richland Co.: E of Bethel Church, 26 Aug 1928, *R. Ridgway 3265* (holotype: F, digital image!).

Standley (1929, p. 38) noted the following about the Illinois hybrid, which was found growing with both parents: "In characters it is intermediate between these two species, but in general appearance it resembles more closely *L. pycnostachya*. The spikes are less dense and have fewer heads than those of that species. The long bracts occurring in the upper part of the spike, the large heads, and the green squarrose outer phyllaries all suggest *L. squarrosa*, and the terminal head of the spike is very similar to a head of that species, except for its smaller size. The heads, of course have more numerous florets than in *L. pycnostachya*, and the pappus is about intermediate between the barbellate pappus of *L. pycnostachya* and the plumose pappus of *L. squarrosa*."

Liatris ×orzellii Nesom, hybrid nov. [*L. elegans* (Walt.) Michx. var. *elegans*, sect. *Liatris* × *L. tenuis* Shinners, sect. *Vorago*] **TYPE: USA. Texas**. Newton Co.: ca. 2 mi E of Texas Hwy 87 at a point 0.3 mi S of Sabine Co. line, W side of valley of tributary N of Mill Creek, 31° 09' 47" N, 93° 42' 03" W, dry sandy cutover longleaf pine savannah, near Willis Formation and Catahoula Formation contact, elev. 330–350 ft, 25 Aug 1988, *S. Orzell & E. Bridges 8273* (TEX).

Hybrid between *Liatris elegans var. elegans* and *L. tenuis* and intermediate in morphology, especially in involucral bracts and pappus.

Additional collection examined. **USA. Texas**. Angelina Co.: Angelina Natl. Forest, SW of Forest Service Rd 313 and FS Rd 313A, N of Boykin Spring Recreation Area, 31° 04' 27" N, 94° 16' 30" W, old-growth, burned, dry, upland longleaf pine savannah, Catahoula Formation, elev. 200–350 ft, 14 Aug 1989, *Orzell & Bridges 11418* (TEX).

The collectors (Steve Orzell and Edwin Bridges) identified both of these collections as interspecific hybrids. Both hybrid plants are similar between themselves and both clearly show intermediate morphology between the two putative parents. Var. *elegans* is the only expression of *L. elegans* that grows at either site (Mayfield 2001). At the same site and date as the type collection, the collectors vouchered both parental species: *Liatris elegans* var. *elegans* (*Orzell & Bridges 8272*, TEX — perhaps slightly introgressed by *L. tenuis*, according to an annotation in 1994 by Mark Mayfield) and typical *L. tenuis* (*Orzell & Bridges 8271*, TEX — slightly different in ecology, Catahoula barrens below high hillside seepage bog). In documentation of the paratype hybrid, the collectors vouchered *Liatris elegans* var. *elegans* from the same site (*Orzell & Bridges 11428*) — perhaps slightly introgressed by *L. tenuis*, according to an annotation in 1994 by Mark Mayfield. Two years earlier, they had collected typical *L. tenuis* at exactly the same site: 10 Aug 1987, *Orzell & Bridges 5614* (TEX).

Liatris elegans (sect. *Liatris*, ser. *Elegantes*) is a distinctive species in its foliaceous floral bracts with petaloid apices, and the hybrids with *L. tenuis* (sect. *Vorago*) show intermediacy in this feature. The pappus of the hybrids also is intermediate between *L. elegans* (plumose bristles) and *L. tenuis* (barbellate bristles). *Liatris tenuis* is similar to species of sect. *Liatris* in its "whitish, thickened, and minutely scabrous leaf margins, cylindric heads, and indurate and loose or spreading, subequal to weakly graduate, somewhat foliaceous, triangular phyllaries with acute to acuminate apices and without hyaline margins" (Nesom 2005, p. 1313), and "In the original description of *Liatris tenuis*, Shinners (1959) noted its general similarity to *L. squarrosa* (ser. *Liatris*) but rejected a hypothesis of close relationship because of the disparity in pappus bristle morphology. Still, the weakly 3-veined leaves of *L. tenuis* suggest that it may be closest to species of ser. *Liatris*, perhaps as a sister element" (p. 1313).

Liatris tenuis
Leaves linear-lanceolate to linear-oblanceolate, 2–3(–5) mm wide; **involucres** cylindro-campanulate, 10–13 mm long; **phyllaries** margins without hyaline borders, ciliate, apices mostly acute to acuminate, not dliated, green; **florets** 10–12; **pappus bristles** barbellate or proximally plumose.

Liatris ×orzellii
Leaves linear-lanceolate, 2.5–6 mm wide; **involucres** cylindric, 12–15 mm long; **phyllaries** margins with narrow, pinkish, hyaline borders, apices slightly or not dilated, abruptly acuminate; **florets** 6–7; **pappus bristles** subplumose. Both collections of the hybrid are very similar between themselves; in *11418*, the heads of the inflorescence widely spaced and the pappus bristles are subplumose, intermediate between the two parents; in *8273*, the heads of the inflorescence are more densely arranged and the pappus bristles are more nearly barbellate, more like *L. tenuis*.

Liatris elegans
Leaves narrowly oblanceolate, 3–8 mm wide; **involucres** turbinate-cylindric, 12–20 mm long; **phyllaries** margins with hyaline borders, apices (at least inner) prolonged, ± dilated, petaloid (pink, purplish, white, or yellow); **florets** 4–5; **pappus bristles** plumose.

Liatris elegans var. *elegans* is the putative parent in another interspecific hybrid, *Liatris* ×*boykinii* Torr. & Gray (Fl. N. Amer. 2(1): 70. 1841), a cross with *L. tenuifolia* Nutt. (sect. *Pilifilis* Nesom), described from near Columbus, Georgia. Gaiser (1951) noted that another collection from Georgia (Sumter Co.: *Harper 635*, NY, US, as cited) is similar to *L.* ×*boykinii* and was noted by its collector to be intermediate between *L. elegans* and *L. tenuifolia*. *Liatris elegans* var. *carrizana* Gaiser, an endemic of east Texas, is the putative parent in two hybrid crosses, one with *L. pycnostachya* (sect. *Suprago*) and one with *L. punctata* Hook. (sect. *Liatris*). Both hybrids were discovered and vouchered in 1992 (TEX) by Mark Mayfield.

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